

MAIL AI

FINAL

PRESNTAION

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Sommin Lim
Dohyeon Bu
Miseo Jeong

Capstone Design Project
December 8, 2023.



Agenda



1

Introduction

Motivation
Objective

2

Project Progress

Real Schedule
Role of each member

3

Implementation

Authentication
Mail Generation
Mail Analysis

4

Demonstration

Live Demo

5

ML/DL

Summary Model
Keyword Extraction Model

6

Discussion

Challenges
Limitation
Q & A

Introduction

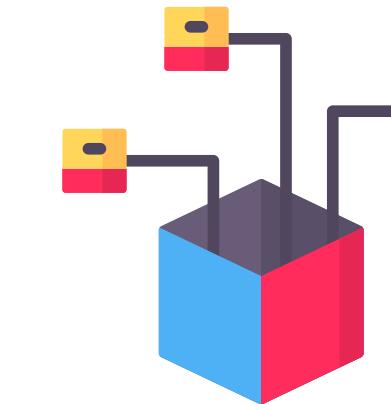
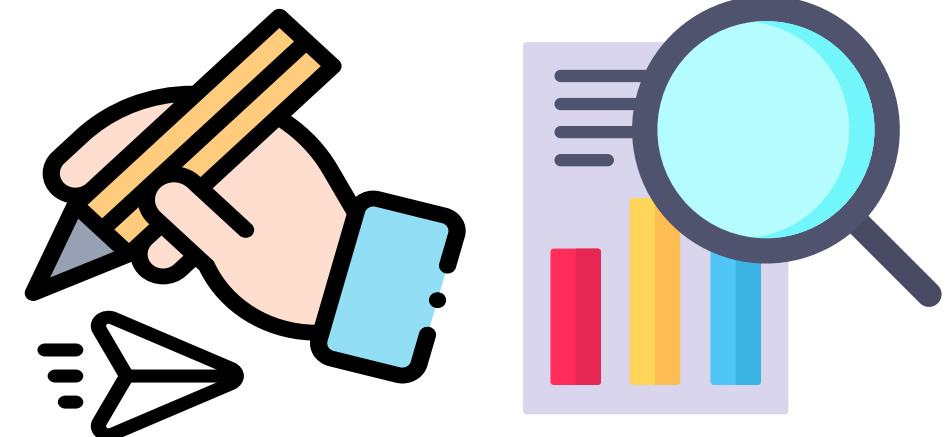
Motivation



Introduction

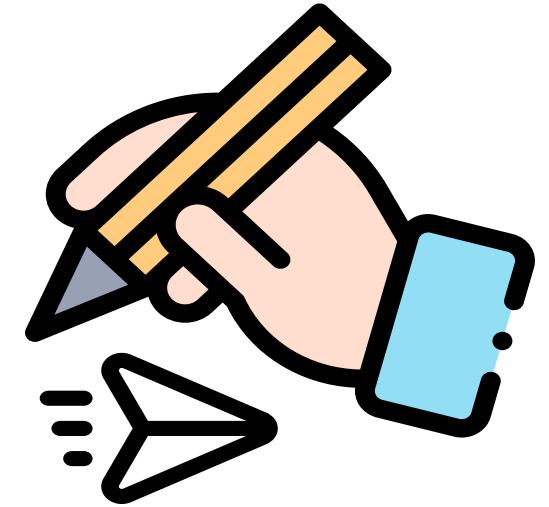
Objective

Objective



Mail Generation

Email Generation using OpenAI RESTful API
Email Sending using SMTP



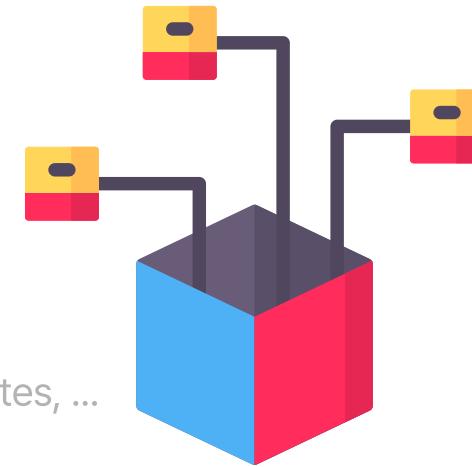
Mail Analysis

Fetch using IMAP and store it MariaDB
Summary
Keyword Extraction
Translation



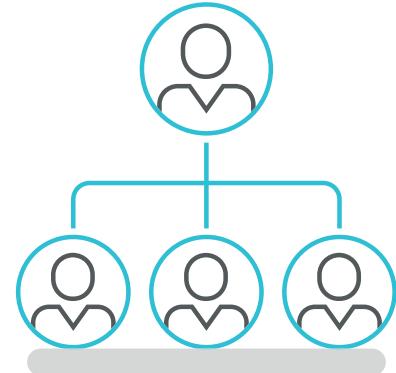
Production

Security: Authentication, CSRF, Encryption, TLS
Robust Database: MariaDB
Cloud Native: Containerized Database, Proxyserver, Certificates, ...



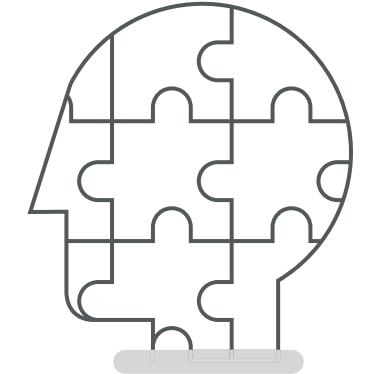
Project Progress

Team Role



01 Project Manager

Yosep Kim



02 Backend

Yosep Kim

Dohyeon Bu



03 Frontend

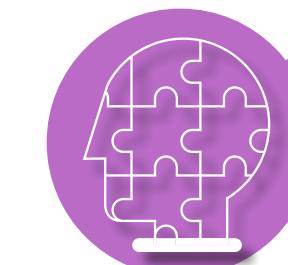
Yosep Kim

Sumin Lim

Miseo Jeong

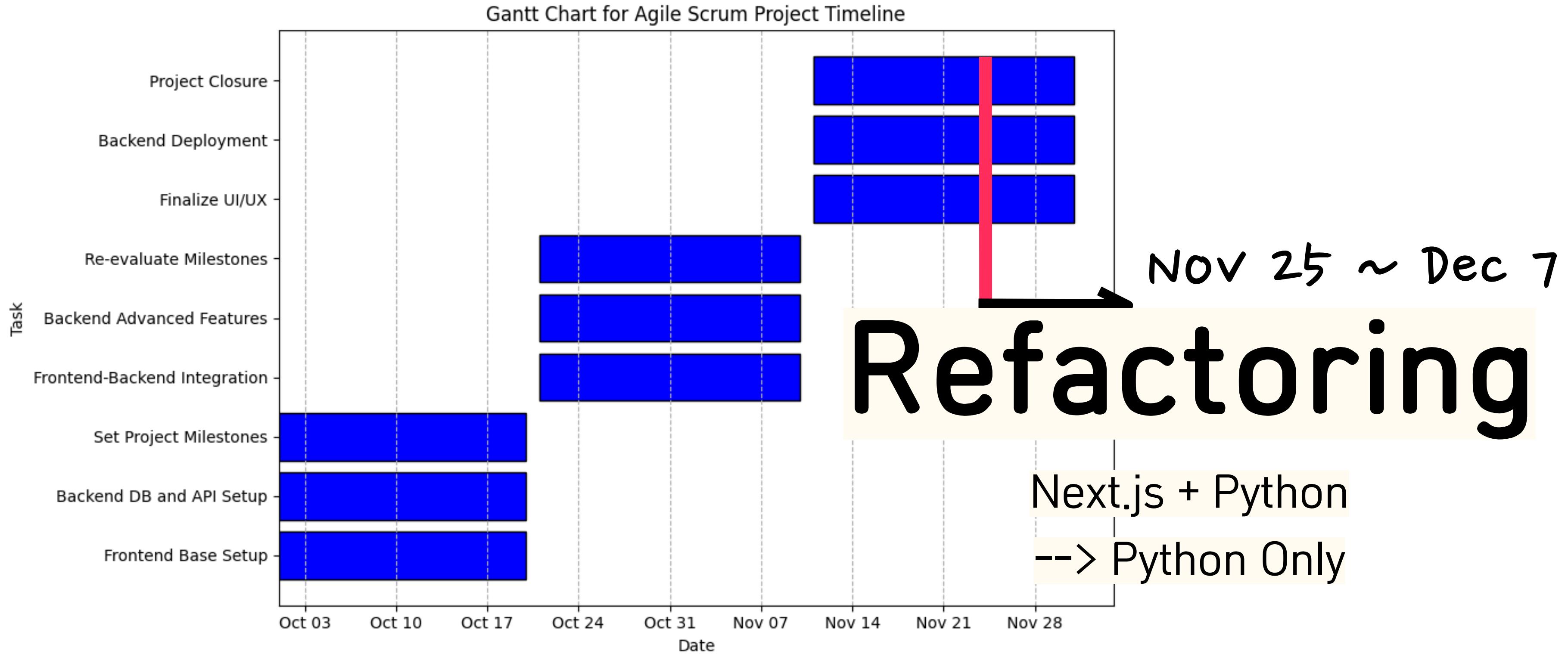


Team Role



Project Progress

Schedule





Implementation

Implementation



Authentication

Database & Encryption

Login/Logout/Signup/Withdrawal
Password Encryption/Decryption
Personal Mailbox Isolation



Generation

REST API & SMTP

Generate Mail: OpenAI
Send Mail: SMTP



Analysis

NLP & IMAP

Keyword: all-mnppnet-base-v2
Summary: facebook/bart-large-cnn
Translation: Google



Implementation

Implementation



Authentication

Database & Encryption

Login/Logout/Signup/Withdrawal
Password Encryption/Decryption
Personal Mailbox Isolation



Generation

REST API & SMTP

Generate Mail: OpenAI
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Analysis

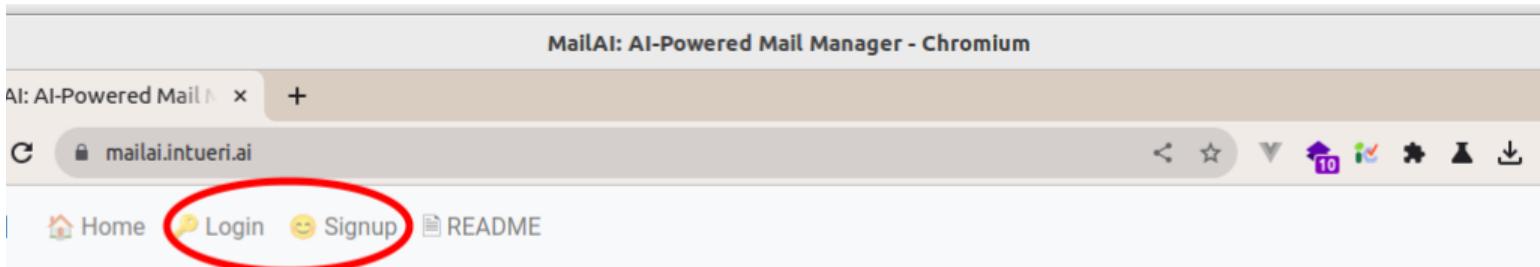
NLP & IMAP

Keyword: all-mptnet-base-v2
Summary: facebook/bart-large-cnn
Translation: Google

Implementation

Authentication

Before Login



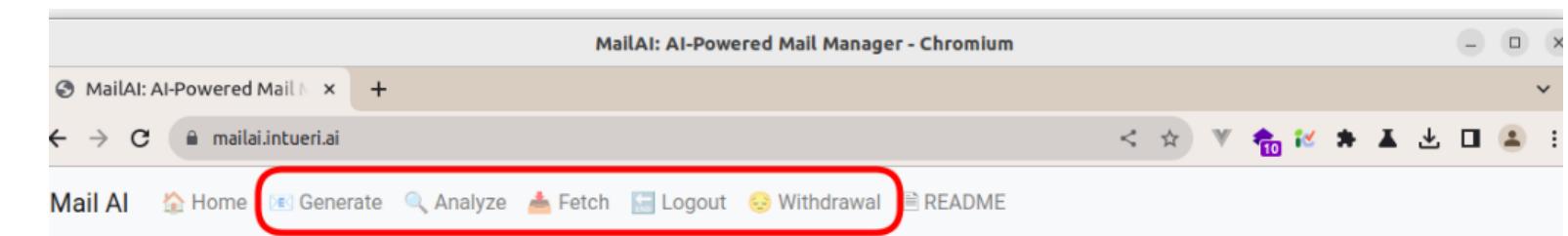
Mail AI

AI-powered Mail Manager



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After Login

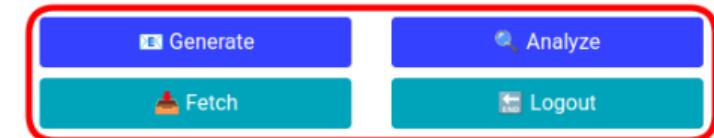


Mail AI

AI-powered Mail Manager



Hello, Yosep Kim!



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<https://mailai.intueri.ai/#mainCarousel>

<https://mailai.intueri.ai/#mainCarousel>

Implementation

Authentication

Login Page

The screenshot shows the MailAI Login page. It features a central 'Login' form with two input fields: 'Username:' containing 'test' and 'Password:' containing several dots. Below the fields is a blue 'Login' button with a key icon. At the bottom of the form, there is a link 'Don't have an account? Create one!'. The page has a header with 'Mail AI' and navigation links for Home, Login, Signup, and README.

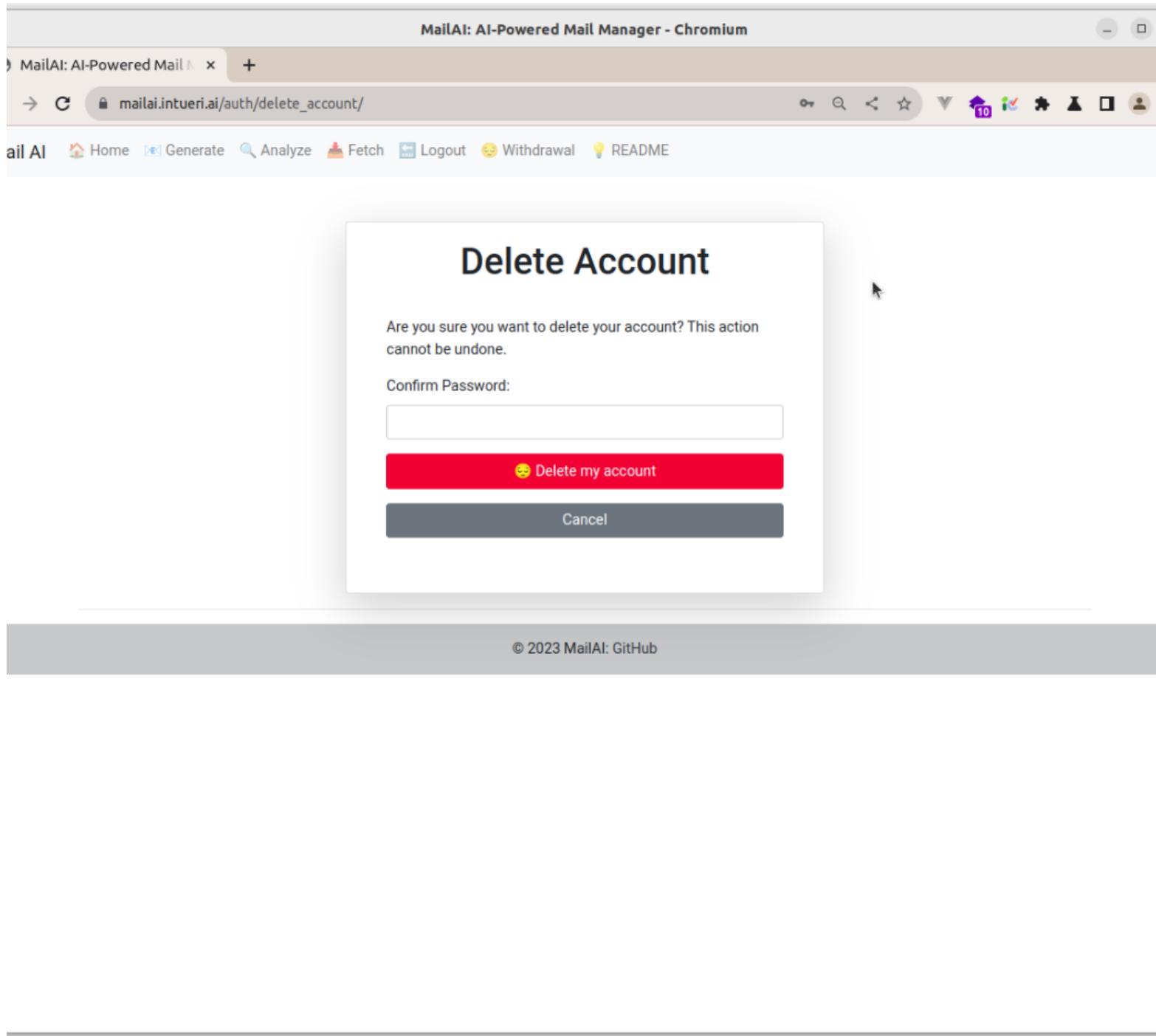
Signup Page

The screenshot shows the MailAI Signup page. It features a central 'Signup' form with seven input fields: 'Username' (with a note: 'Required. 150 characters or fewer. Letters, digits and @/./+/-/_ only.'), 'First name' (Required), 'Last name' (Required), 'Email', 'Password', 'Password confirmation', and 'Smtp password'. Below these fields is a blue 'Signup' button with a smiley face icon. At the bottom of the form, there is a link 'Already have an account? Login'. The page has a header with 'Mail AI' and navigation links for Home, Login, Signup, and README.

Implementation

Authentication

Withdrawal Page



Confirmation Form

Delete Account

Are you sure you want to delete your account? This action cannot be undone.

Confirm Password:

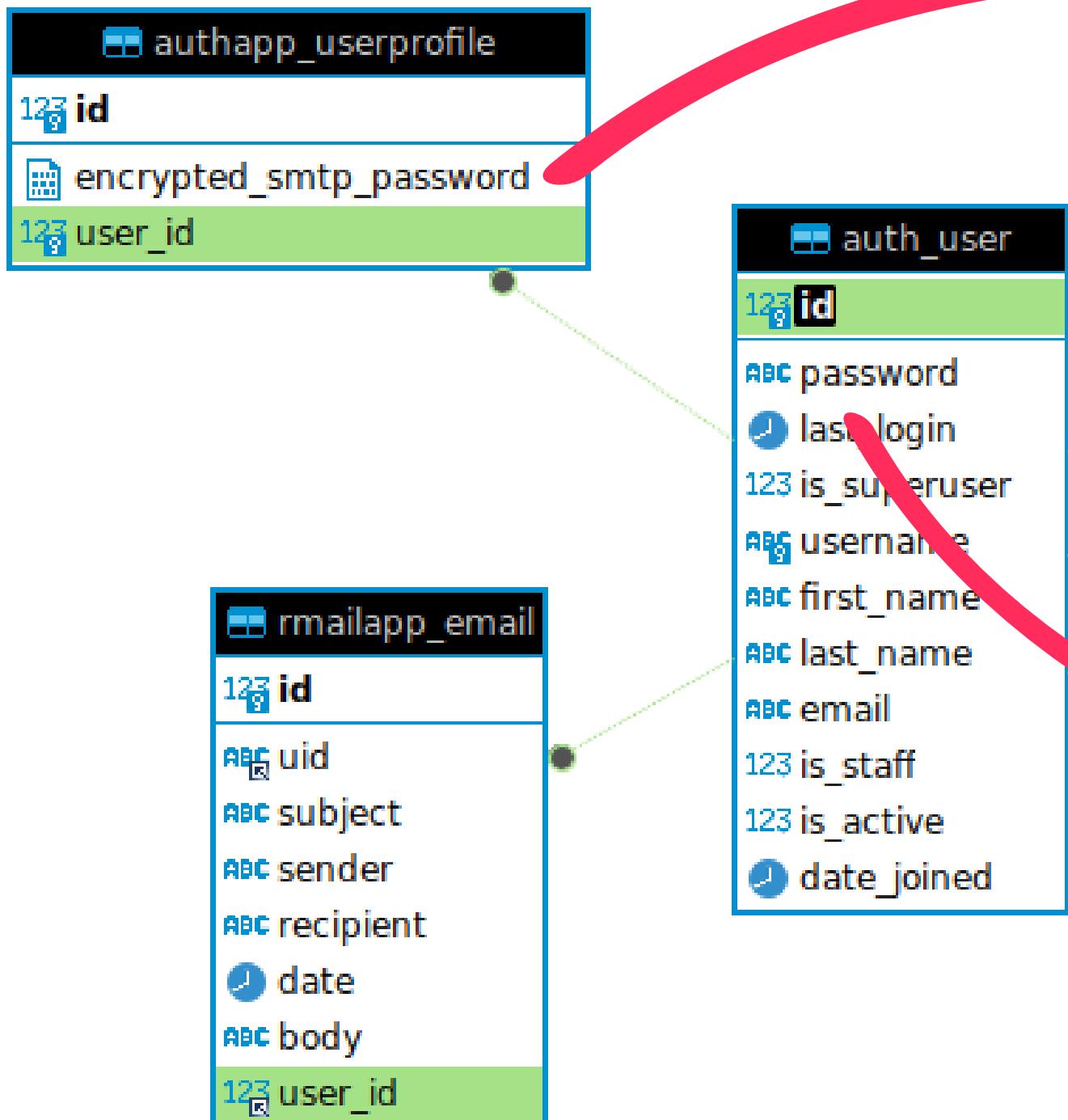
Delete my account

Cancel

Implementation

Authentication

User Auth ERD



3rd Party Auth Fernet (symmetric encryption)

id	encrypted_smtp_password	user_id
1	eféÉÉù½c\Ô C7X l",CÑ' , c... [201]	2
2	eg f3Qn ó¾ÕàÈ OT?0Û\$â z(ög... [201]	3
3	eg 8 Nø¾/ºÆÄ² r1 q!±à±¤ líÐ... [201]	4
4	eh Gu8wº V l·'Q mîÐQ5 ý ... [201]	5
5	eji áÝf _²4³/ä ÅGô 8ë,"m²²... [201]	6

Native Auth PBKDF2 (SHA256 hash)

id	password	last_login	is_superuser
1	pbkdf2_sha256\$600000\$25Mg1hDg	2023-12-07 07:25:54.642693	
2	pbkdf2_sha256\$600000\$5pFw5CQt	2023-12-07 11:53:22.271609	
3	pbkdf2_sha256\$600000\$VCzzMO6h	2023-11-30 15:03:55.959232	
4	pbkdf2_sha256\$600000\$TfhK5TDEL	2023-11-29 11:23:45.444902	
5	pbkdf2_sha256\$600000\$zP1KxILpIE	2023-11-30 12:55:44.240226	
6	pbkdf2_sha256\$600000\$mFK6KQ3V	2023-12-02 03:37:51.961503	



Implementation

Implementation



Authentication

Database & Encryption

Login/Logout/Signup/Withdrawal

Password Encryption/Decryption

Personal Mailbox Isolation

Mail AI



Generation

REST API & SMTP

Generate Mail: OpenAI

Send Mail: SMTP



Analysis

NLP & IMAP

Keyword: all-mptnet-base-v2

Summary: facebook/bart-large-cnn

Translation: Google

* 페이지 내 인물 사진은 샘플 이미지입니다.

Implementation

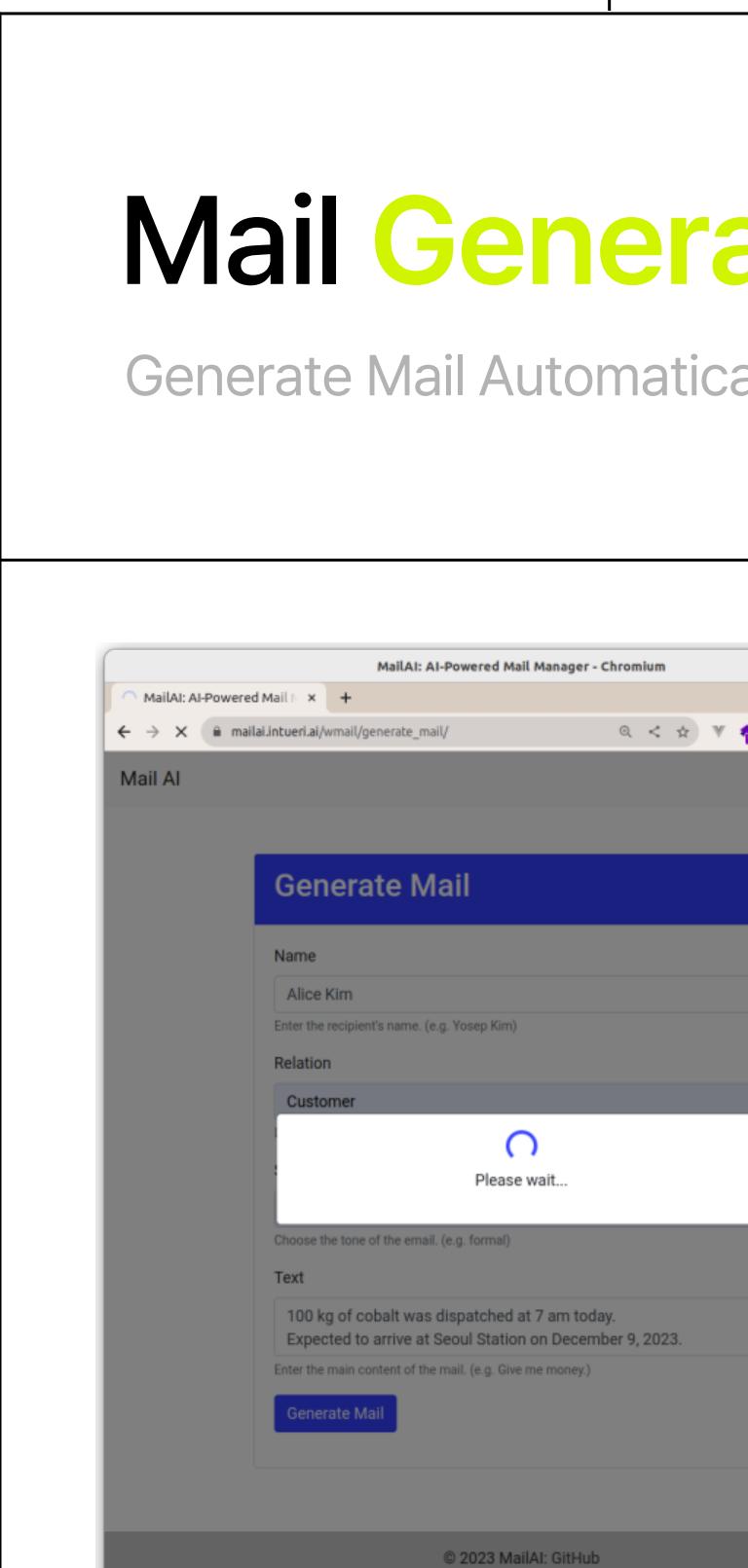
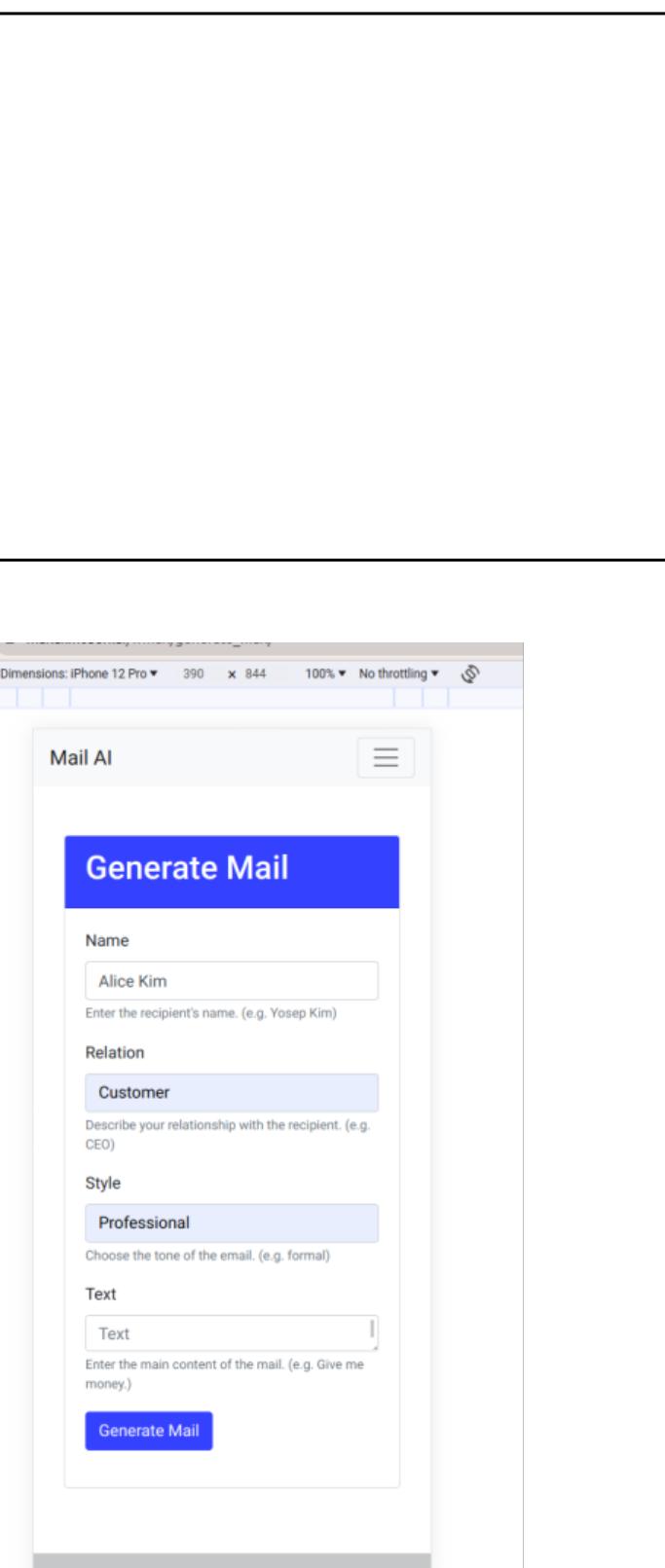
Generation

Mail AI



Mail Generation

Generate Mail Automatically

Implementation

Generation

Preview and Send Your Email

Recipient

mai477113@gmail.com

recipient@example.com

Subject

Dispatch Notification: 100 kg Cobalt Shipment En Route to Seoul Sti

Auto Generated. You can edit it before sending

Message

Dear Alice,

I hope this email finds you well. As your dedicated customer, I wanted to inform you that we have dispatched 100 kg of cobalt this morning at 7 am.

The shipment is expected to arrive at Seoul Station on December 9, 2023. We have taken all necessary measures to ensure a smooth and timely delivery.

If you have any questions or require further information, please feel free to reach out to me.

Thank you for your continued support.

Best regards,

Alice Kim

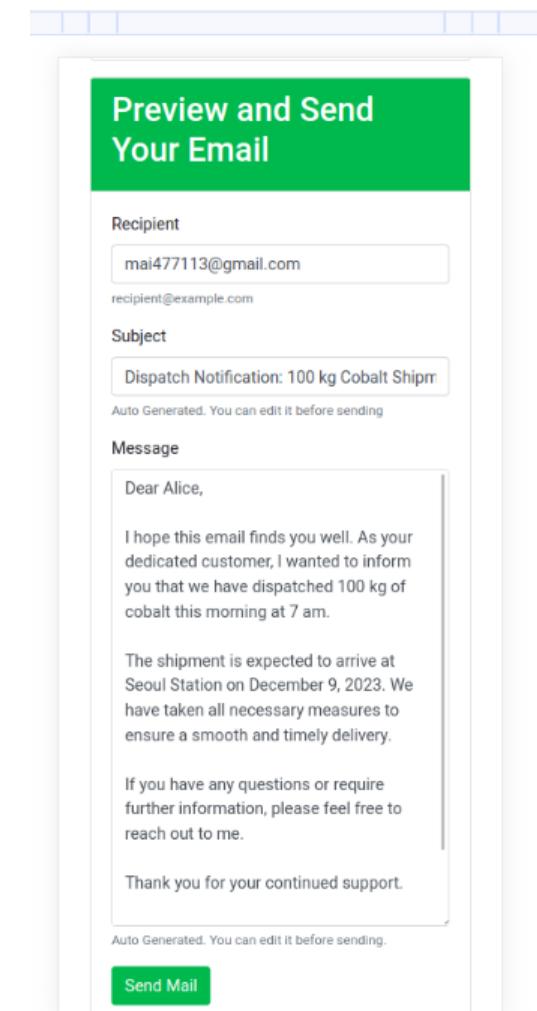
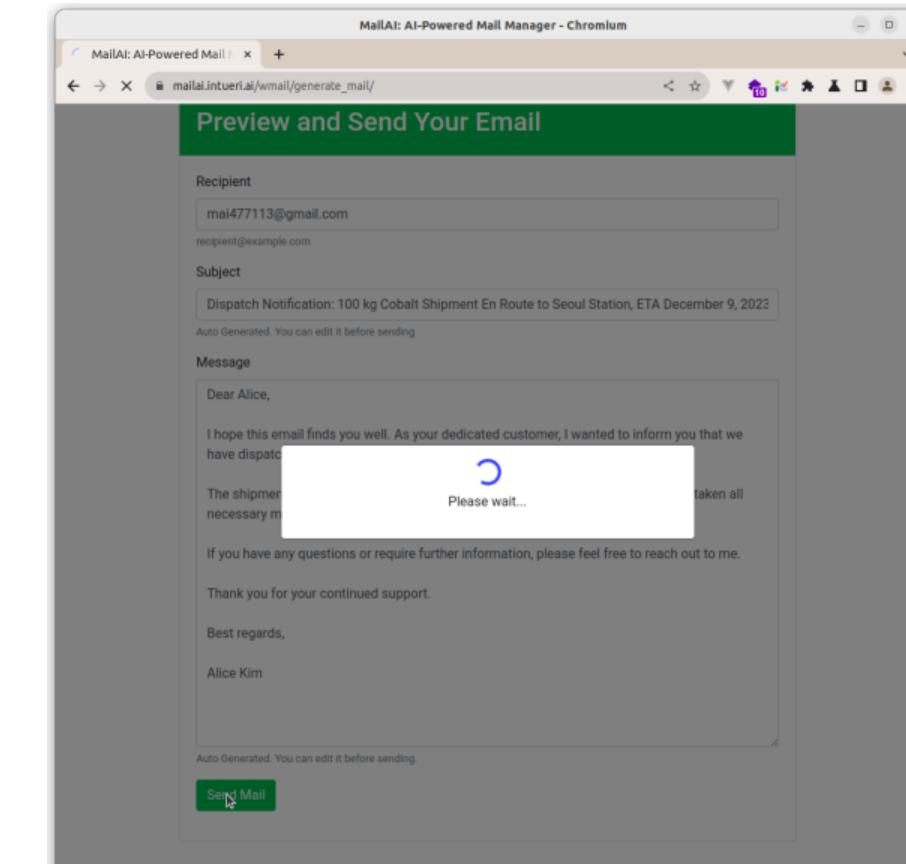
Auto Generated. You can edit it before sending.

Send Mail

Mail Sending

Send Mail Using SMTP

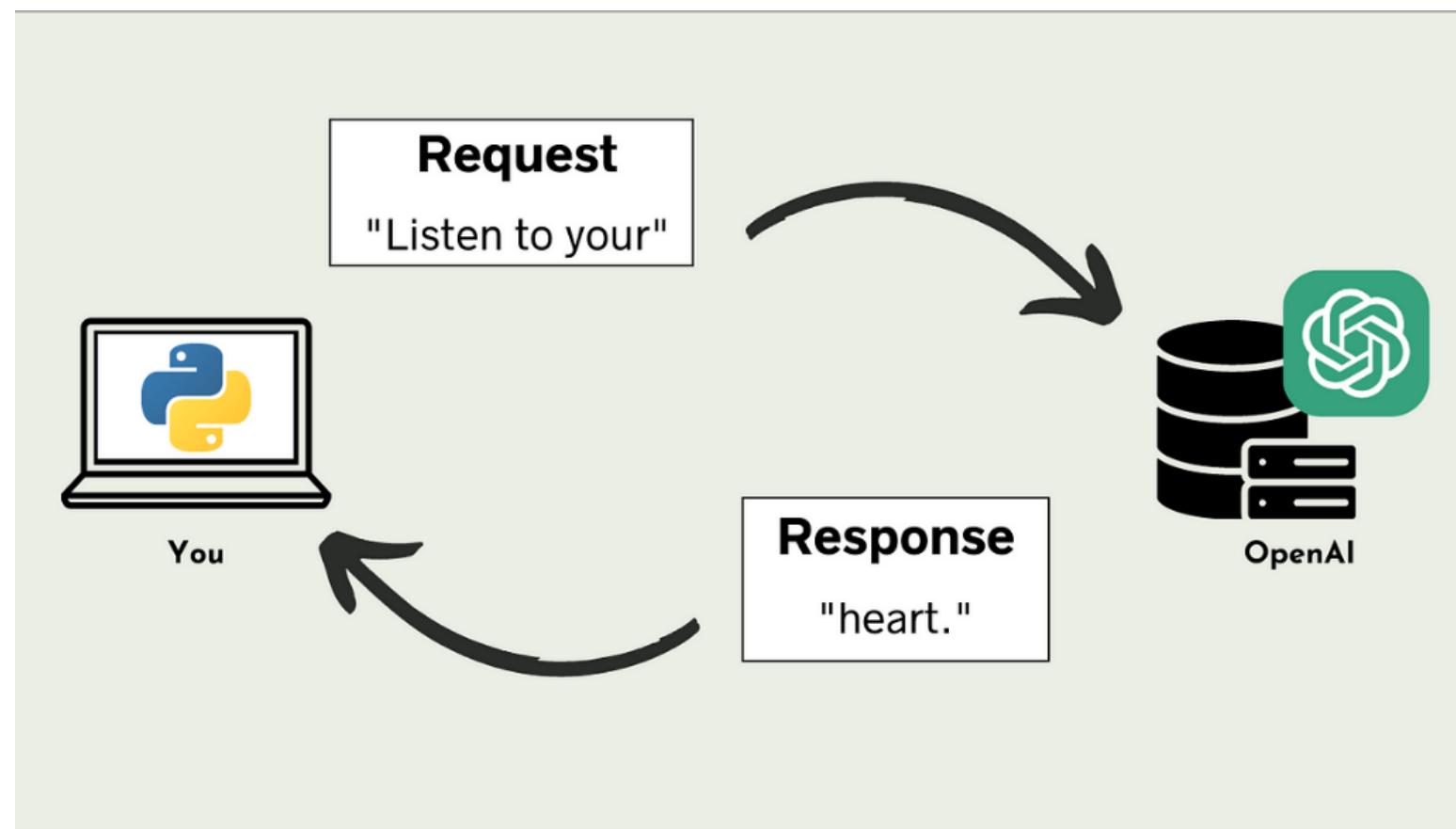
You can modify it before sending



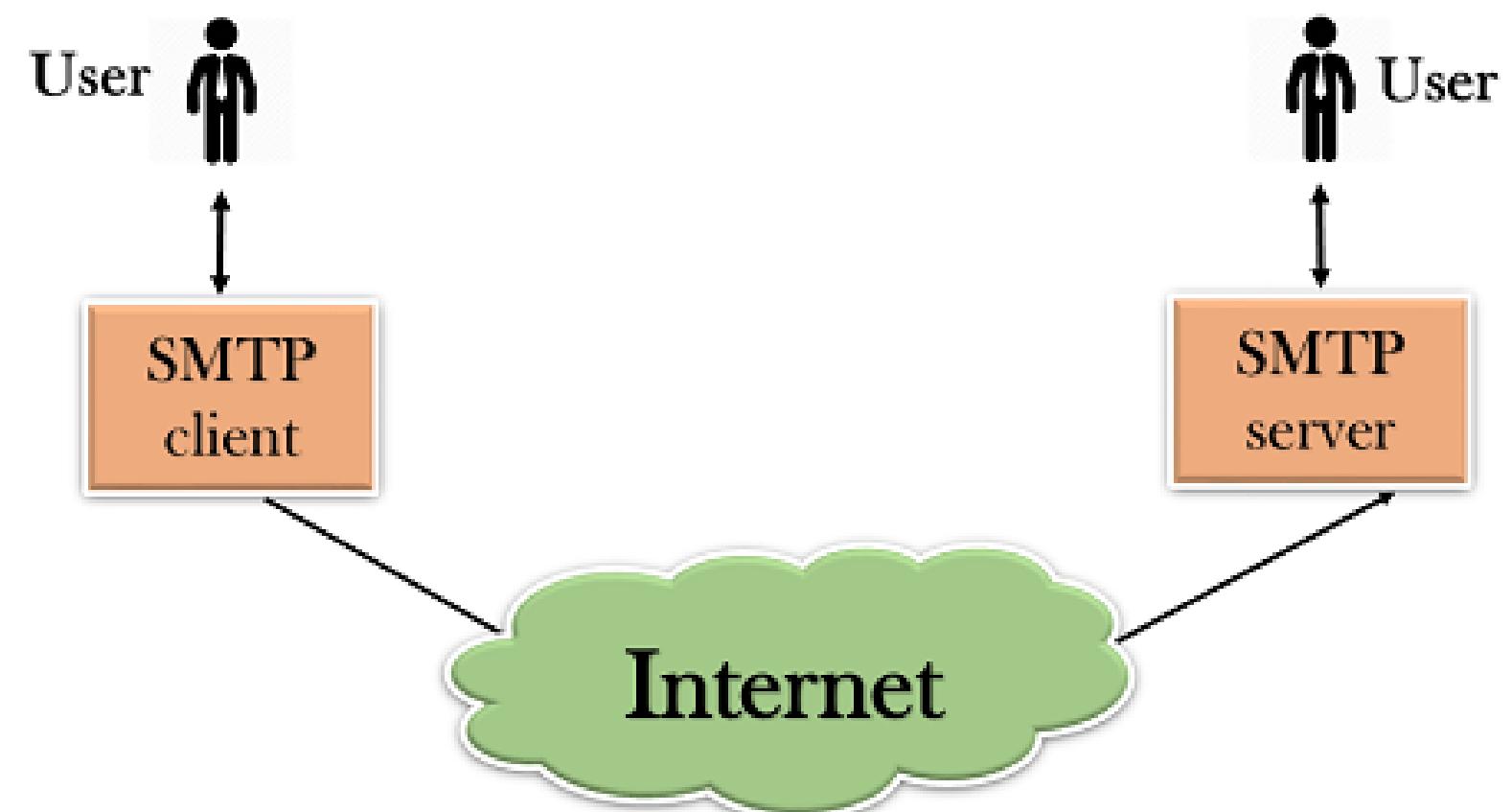
Implementation

Generation

Mail AI Native Request API



Mail AI Native SMTP API





Implementation

Implementation



Authentication

Database & Encryption

Login/Logout/Signup/Withdrawal
Password Encryption/Decryption
Personal Mailbox Isolation



Generation

REST API & SMTP

Generate Mail: OpenAI
Send Mail: SMTP



Analysis

NLP & IMAP

Keyword: all-mptnet-base-v2
Summary: facebook/bart-large-cnn
Translation: Google

Implementation

Analysis

Mail List Page

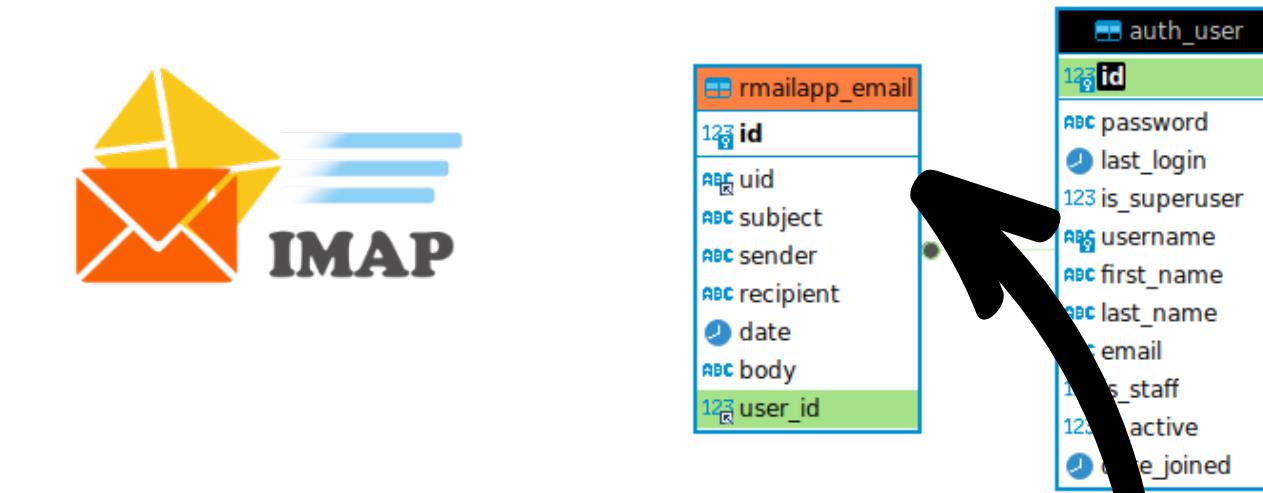
[SK] Job Offer Letter
From: tofu7679@g.skku.edu
Date: Dec. 7, 2023, 12:26 p.m.

후속 논의 관련 이메일
From: imsumin683@gmail.com
Date: Dec. 7, 2023, 11:54 a.m.

Dispatch Notification: 100 kg Cobalt Shipment En Route to Seoul Station, ETA December 9, 2023
From: mai477113@gmail.com
Date: Dec. 7, 2023, 11:51 a.m.

Follow-up on Our Recent Discussion
From: imsumin683@gmail.com
Date: Dec. 7, 2023, 11:47 a.m.

Mail AI Native IMAP API



Mail Fetch Page

ai.intueri.ai/rmail/handle-emails/

Generate Analyze Fetch Logout Withdrawal README

Fetch Emails

Are you sure you want to delete all emails?

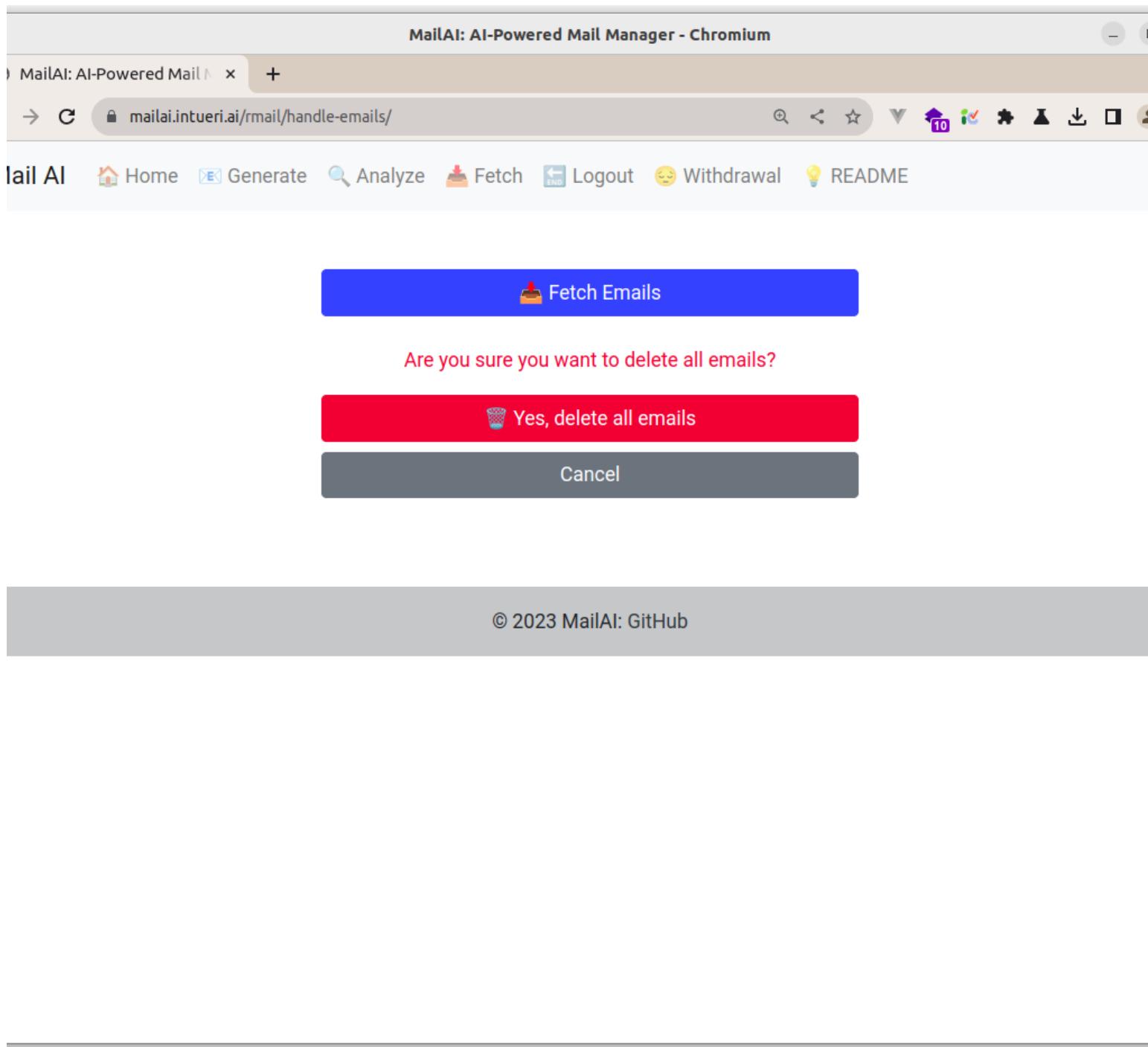
Yes, delete all emails

Cancel

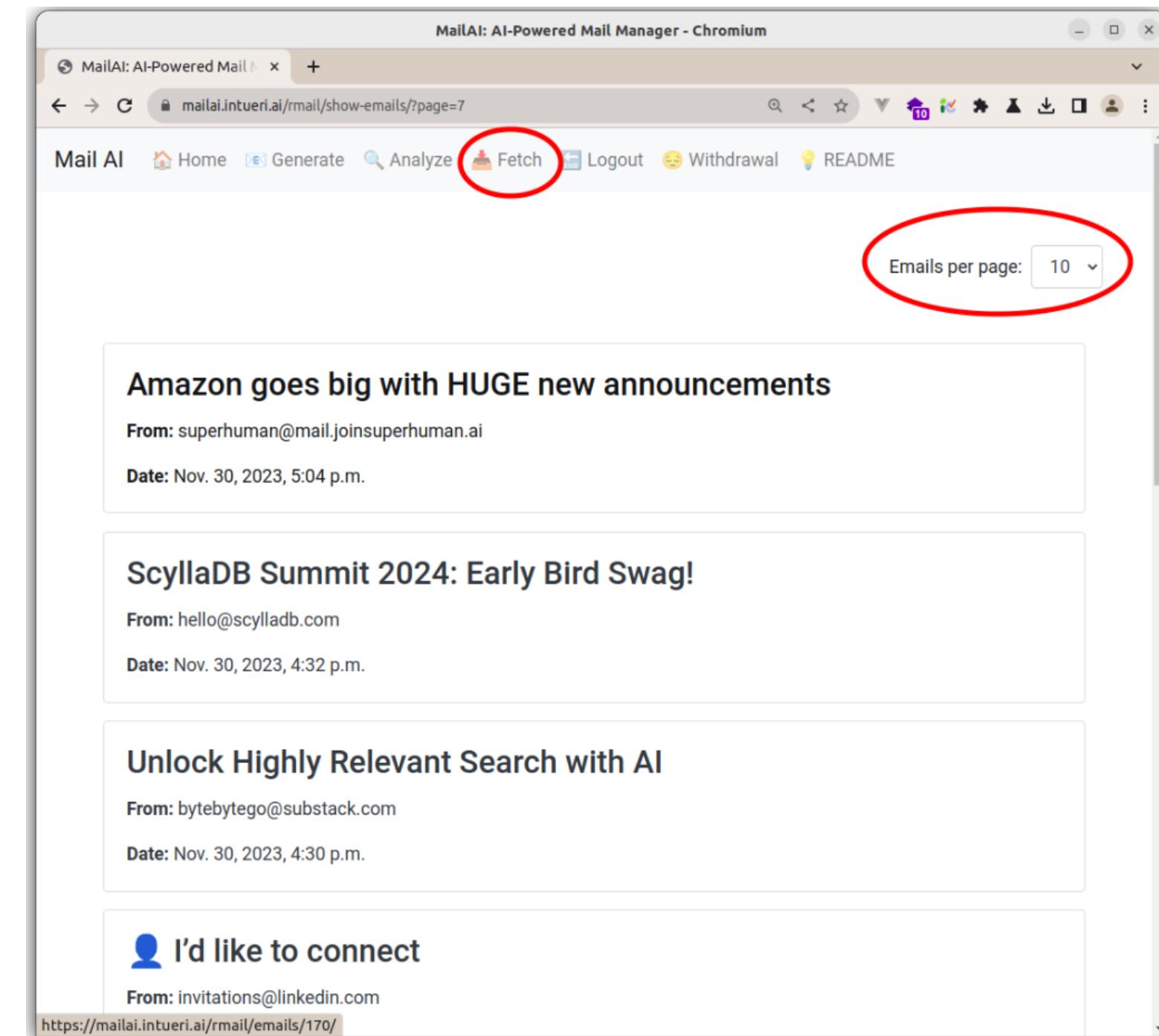
Implementation

Analysis

Fetch Page



Email List Page



Implementation

Analysis

MailAI: AI-Powered Mail Manager - Chromium

MailAI: AI-Powered Mail x + mailai.intueri.ai/rmail/emails/28/

Mail AI Home Generate Analyze Fetch Logout Withdrawal README

Email Details

AWS re:Invent starts this week: Livestream for free

From: aws-marketing-email-replies@amazon.com
To: admin@intueri.ai
Date: Nov. 27, 2023, 9:17 p.m.



AWS re:Invent starts this week!
[Register for free to livestream the most-anticipated AWS announcements.](#)
Hear news, product updates, and inspiring customer stories in real time. You can also watch keynotes, Innovation Talks, and breakout sessions on demand, to learn at your own pace.

Email Detail

You can Analyze your email.

MailAI: AI-Powered Mail Manager - Chromium

Mail AI Home Generate Analyze Fetch Logout Withdrawal README

Email Details

From: yosep.kim@intueri.ai
To: yosep.kim@intueri.ai
Date: Dec. 6, 2023, 6:08 a.m.

[Translation \(Google\)](#) [Translation \(OpenAI\)](#)
[Summary \(OpenAI\)](#) [Summary \(BERT\)](#)
[Keywords \(KeyBERT\)](#) [Original Mail](#)

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Mail AI

Email Details

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Date: Dec. 6, 2023, 6:08 a.m.

[Translation \(Google\)](#) [Translation \(OpenAI\)](#)
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Implementation

Analysis

MailAI: AI-Powered Mail Manager - Chromium

MailAI: AI-Powered Mail Manager - Chromium

mail AI | mailai.intueri.ai/rmail/emails/28/

Email Details

AWS re:Invent starts this week: Livestream for free

From: aws-marketing-email-replies@amazon.com
To: admin@intueri.ai
Date: Nov. 27, 2023, 9:17 p.m.

[Extracted Keywords]

Keyword	Score
aws	0.60
cloud	0.49
ai	0.48
industries	0.42
computing	0.42

[Original Mail]

AWS re:Invent NOV. 27 – DEC. 1, 2023 | LAS VEGAS, NV

Email Keyword

all-mpnet-base-v2-embedding-all

MailAI: AI-Powered Mail Manager - Chromium

MailAI: AI-Powered Mail Manager - Chromium

mail AI | mailai.intueri.ai/rmail/emails/28/

Email Details

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computing	0.42

Translation (Google) Translation (OpenAI)
Summary (OpenAI) Summary (BERT)
Keywords (KeyBERT) Original Mail

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Implementation

Analysis

MailAI: AI-Powered Mail Manager - Chromium
 mail AI [Home](#) [Generate](#) [Analyze](#) [Fetch](#) [Logout](#) [Withdrawal](#) [README](#)

[mailai.intueri.ai/rmail/emails/28/](#)

Email Details

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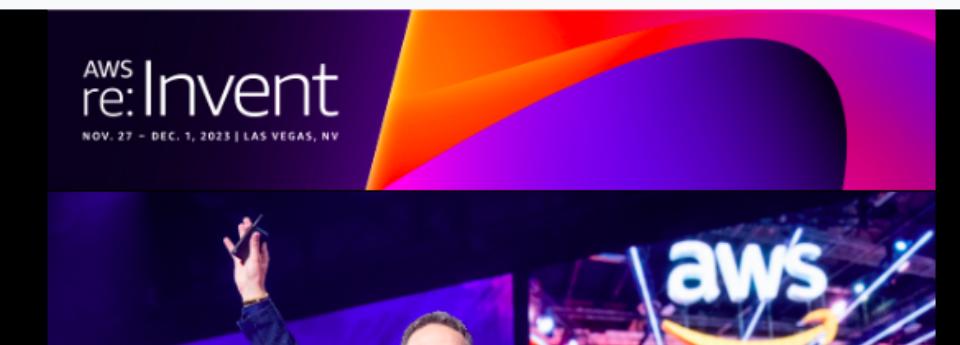
From: aws-marketing-email-replies@amazon.com
To: admin@intueri.ai
Date: Nov. 27, 2023, 9:17 p.m.

[Summarized Mail (BERT)]

Summary

AWS re:Invent starts this week. Hear news, product updates, and inspiring customer stories in real time. You can also watch keynotes, Innovation Talks, and breakout sessions on demand.

[Original Mail]



Email Summary

bart-large-cnn-samsum

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From: aws-marketing-email-replies@amazon.com
To: admin@intueri.ai
Date: Nov. 27, 2023, 9:17 p.m.

[Summarized Mail (BERT)]

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[Original Mail]



Implementation

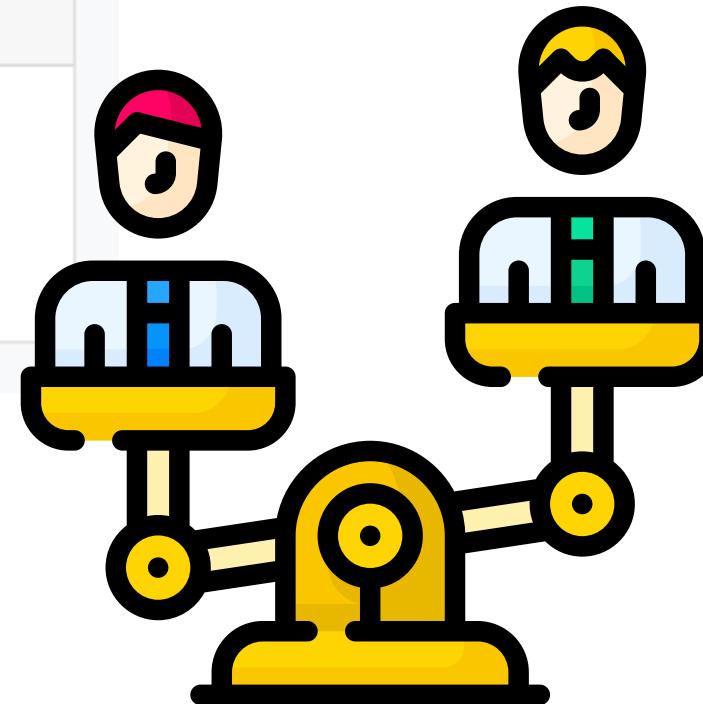
Analysis

BART LARGE CNN

[Summarized Mail (BERT)]

Summary

Elon Musk is raising \$1 billion for his chatbot startup xAI. xAI has already raised \$135 million, and could raise up to another \$865 million.



You can compare.

OPENAI REST API

[Summarized Mail (OpenAI)]

- Elon Musk has founded xAI, an alternative to OpenAI, and has raised \$135 million with the potential to raise another \$865 million.
- xAI has launched Grok, its alternative to OpenAI's ChatGPT.
- Competitors such as Google's Bard and Anthropic's Claude have tried to rival OpenAI's ChatGPT and GPT-4, but none have surpassed its capabilities.
- Mistral, another OpenAI competitor, is reportedly close to raising almost \$500 million with a \$2 billion valuation in a funding round involving Salesforce and Nvidia.

Implementation

Analysis

<http://mailai.intueri.ai/rmail/emails/28/>

Mail AI Home Generate Analyze Fetch Logout Withdrawal README

Email Details

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Livestream for free**

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To: admin@intueri.ai
Date: Nov. 27, 2023, 9:17 p.m.

[Translated Mail (Google)]

AWS Keynotes & Innovation Talks Streaming Streaming, Live, Online 및 무료 AWS Re : 발명은 이번 주에 시작됩니다! 가장 기대되는 AWS 발표를 라이브 스트림으로 무료로 등록하십시오 .뉴스, 제품 업데이트 및 영감을주는 고객 스토리를 실시간으로 듣습니다. 당신은 또한 자신의 속도로 배우기 위해 기조 연설, 혁신 대화 및 요청에 대한 탈주 세션을 볼 수 있습니다. 무료로 등록하십시오 기조 연설 Adam Selipsky CEO, AWS 11 월 28 일 화요일 |오전 8시 - 오전 10시 30 분 (PST) Adam Selipsky에 가입하여 데이터, 인프라 및 머신 러닝의 혁신을 통해 미래 지향적인 건축업자가 AWS를 통해 산업과 미래를 어떻게 변화시키고 있는지 조사합니다. 더 알아보기 피터 데 산티스 AWS 유ти리티 컴퓨팅 수석 부사장 11 월 27 일 월요일 |오후 7시 30 분 - 오후 9시 (PST) Peter Desantis는 AWS 서비스를 제공하는 엔지니어링과 혁신의 독특한 접근 방식과 문화가 최첨단 솔루션을 만드는데 어떻게 도움이되는지 논의하면서 참여하십시오. 더 알아보기 Swami Sivasubramanian 박사 부사장, 데이터 및 AI, AWS 11 월 29 일 수요일 |오전 8시 30 분 - 오전 10시 30 분 (PST) Dr. Swami Sivasubramanian에 가입하여 회사 데이터를 사용하여 조직을 위한 차별화된 생성 AI 응용 프로그램을 구축하는 방법을 알아보십시오. 더 알아보기 Ruba Borno 박사 VP, AWS 전세계 채널 및 제휴사 11 월 29 일 수요일 |오후 3시 - 오후 4 시 30 분 (PST) Ruba Borno 박사와 함께 AWS 파트너 기조 연설을 위해 전략적 파트너십에 대해 배우고 AWS 및 AWS 파트너가 고객이 중요한 비즈니스 문제를 해결

Mail Translation

Using Google Translation

MailAI: AI-Powered Mail Manager - Chromium

MailAI: AI-Powered Mail x +

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Translation (Google) Translation (OpenAI)
Summary (OpenAI) Summary (BERT)
Keywords (KeyBERT) Original Mail

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Mail AI

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Date: Nov. 27, 2023, 9:17 p.m.

[Translated Mail (Google)]

AWS Keynotes & Innovation Talks Streaming Streaming, Live, Online 및 무료 AWS Re : 발명은 이번 주에 시작됩니다! 가장 기대되는 AWS 발표를 라이브 스트림으로 무료로 등록하십시오 .뉴스, 제품 업데이트 및 영감을주는 고객 스토리를 실시간으로 듣습니다. 당신은 또한 자신의 속도로 배우기 위해 기조 연설, 혁신 대화 및 요청에 대한 탈주 세션을 볼 수 있습니다. 무료로 등록하십시오 기조 연설 Adam Selipsky CEO, AWS 11 월 28 일 화요일 |오전 8시 - 오전 10시 30 분 (PST) Adam Selipsky에 가입하여 데이터, 인프라 및 머신 러닝의 혁신을 통해 미래 지향적인 건축업자가 AWS를 통해 산업과 미래를 어떻게 변화시키고 있는지 조사합니다. 더 알아보기 피터 데 산티스 AWS 유티리티 컴퓨팅 수석 부사장 11 월 27 일 월요일 |오후 7시 30 분 - 오후 9시 (PST) Peter Desantis는 AWS 서비스를 제공하는 엔지니어링과 혁신의 독특한 접근 방식과 문화가 최첨단 솔루션을 만드는데 어떻게 도움이되는지 논의하면서 참여하십시오. 더 알아보기 Swami Sivasubramanian 박사 부사장, 데이터 및 AI, AWS 11 월 29 일 수요일 |오전 8시 30 분 - 오전 10시 30 분 (PST) Dr. Swami Sivasubramanian에 가입하여 회사 데이터를 사용하여 조직을 위한 차별화된 생성 AI 응용 프로그램을 구축하는 방법을 알아보십시오. 더 알아보기 Ruba Borno 박사 VP, AWS 전세계 채널 및 제휴사 11 월 29 일 수요일 |오후 3시 - 오후 4 시 30 분 (PST) Ruba Borno 박사와 함께 AWS 파트너 기조 연설을 위해 전략적 파트너십에 대해 배우고 AWS 및 AWS 파트너가 고객이 중요한 비즈니스 문제를 해결

Implementation

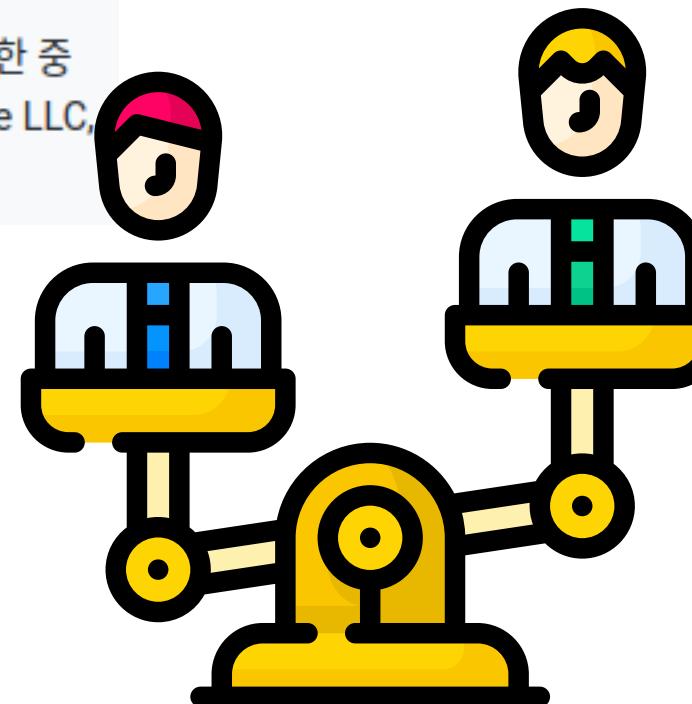
Analysis

Google Translator

Open AI

[Translated Mail (Google)]

계정에 로그인하기 위해 생성 된 앱 비밀번호 yosep.kim@intueri.ai 테스트를 위해 이 암호를 생성하지 않은 경우 누군가가 귀하의 계정을 사용하고 있을 수 있습니다. 지금 계정을 확인하고 보호하십시오. 활동 확인 보안 활동을 볼 수도 있습니다
<https://myaccount.google.com/notifications> Google 계정 및 서비스에 대한 중요한 변경 사항에 대해 알려주기 위해 이메일을 받았습니다. © 2023 Google LLC, 1600 원형 극장 파크 웨이, Mountain View, CA 94043, 미국



You can compare.

[Translated Mail (OpenAI)]

생성된 앱 비밀번호로 계정에 로그인하십시오
yosep.kim@intueri.ai

이 비밀번호를 테스트를 위해 생성하지 않았다면, 누군가가 귀하의 계정을 사용하고 있을 수 있습니다. 지금 확인하고 계정을 안전하게 유지하십시오.

활동 확인
보안 활동은 다음에서도 확인할 수 있습니다.
<https://myaccount.google.com/notifications>

Google 계정 및 서비스에 중요한 변경 사항이 있음을 알려드리기 위해 이 이메일을 받았습니다.

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Live Demo

Mail AI

<https://mailai.intueri.ai>



Mail AI





ML/DL

1. Summary

seq2sec

→ bart-large-cnn-samsum

2. Keyword Extraction

sentence transformer

→ all-mpnet-base-v2-embedding-all



[facebook/bart-large-cnn](#)

Hugging Face Search models, datasets, users...

[facebook/bart-large-cnn](#) like 702

Summarization Transformers PyTorch TensorFlow JAX Rust

Safetensors [cnn_dailymail](#) English bart text2text-generation Eval Results

Inference Endpoints arxiv:1910.13461 License: mit

Train Deploy Use in Transformers

Model card Files Community 63 Edit model card

BART (large-sized model), fine-tuned on CNN Daily Mail

BART model pre-trained on English language, and fine-tuned on [CNN Daily Mail](#). It was introduced in the paper [BART: Denoising Sequence-to-Sequence Pre-training for Natural Language Generation, Translation, and Comprehension](#) by Lewis et al. and first released in [this repository (<https://github.com/pytorch/fairseq/tree/master/examples/bart>)].

Disclaimer: The team releasing BART did not write a model card for this model so this model card has

Downloads last month 6,007,244

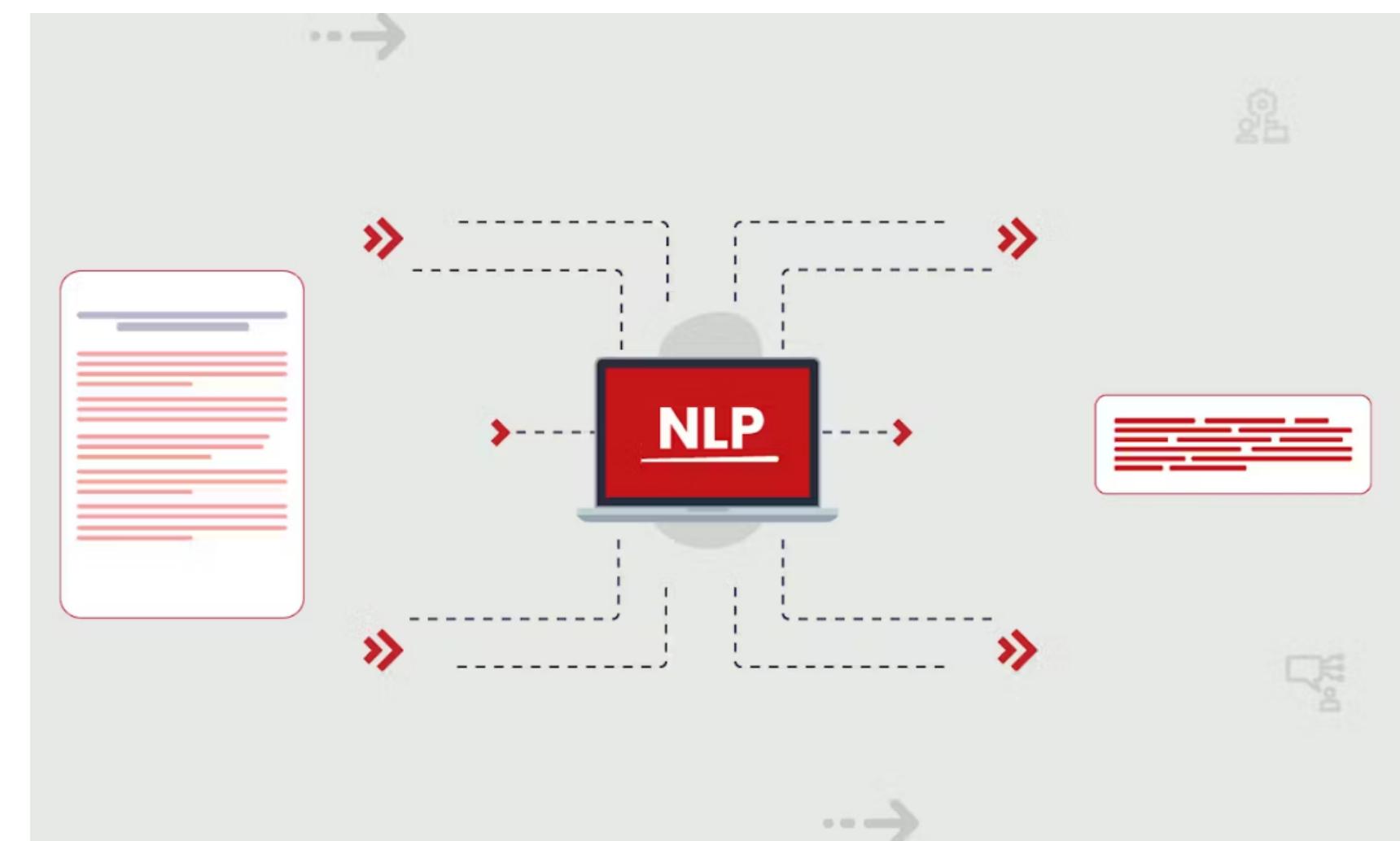
Safetensors Model size 406M params Tensor type F32

Inference API Examples Your sentence here... Compute

Summary

bart-large-cnn-samsum

Mail AI Summary Model



The screenshot shows the 'samsum' dataset card on the Hugging Face Datasets platform. The top navigation bar includes a search bar, a user icon, and a menu icon. Below the header, the dataset name 'Datasets: samsum' is displayed with a 'like' count of 192. The dataset details section includes fields for Tasks (Summarization), Languages (English), Multilinguality (monolingual), Size Categories (10K<n<100K), Language Creators (expert-generated), Annotations Creators (expert-generated), Source Datasets (original), ArXiv (arxiv:1911.12237), Tags (conversations-summarization), and License (cc-by-nc-nd-4.0). Below this, there are sections for 'Dataset card' (with a link to 'Dataset card'), 'Files' (with a link to 'Files'), and 'Community' (with a link to 'Community' and a count of 3). A summary section shows 'Downloads last month' at 280,136, with buttons for 'Use in dataset library' and 'Edit dataset card'. Another section features a 'Papers with Code' button and a three-dot menu button. At the bottom, there are links for 'Homepage' (arxiv.org) and 'Paper' (arxiv.org).

Dataset sumsum

Total Data

16369 conversations

Institute

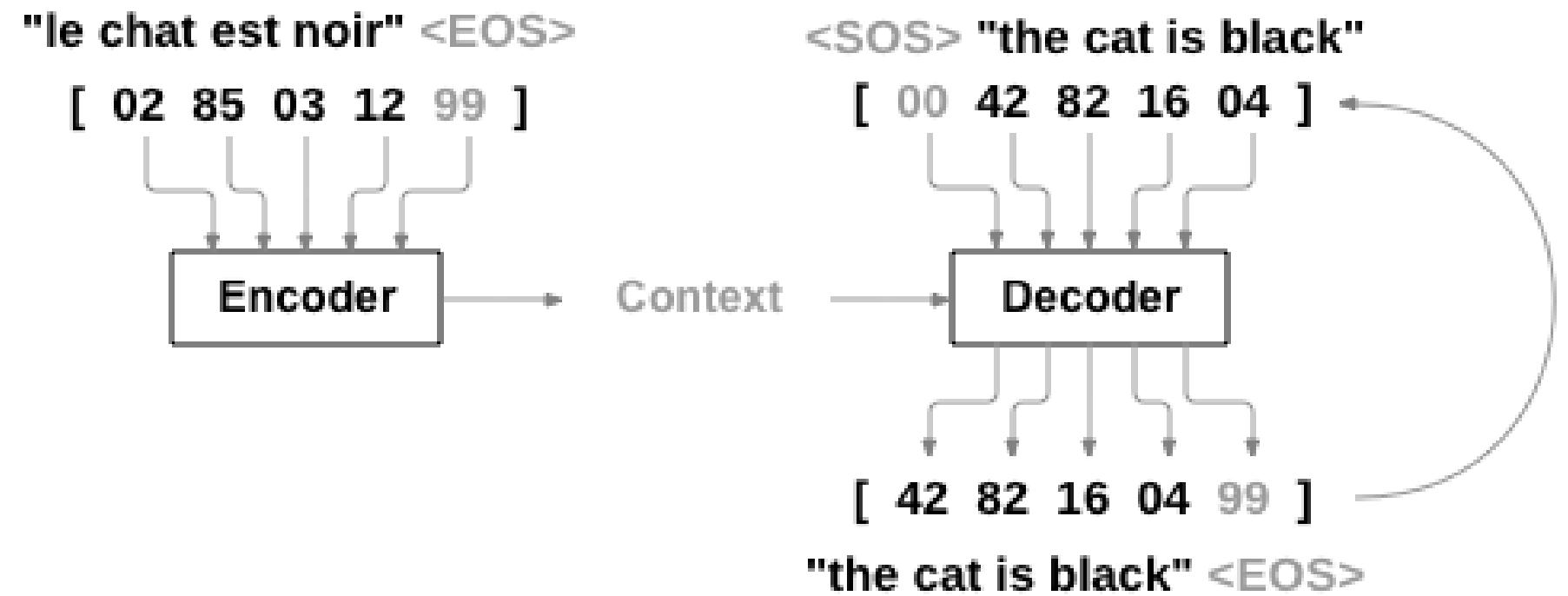
Samsung R&D Institute Poland

Splits

train: 14732, val: 818, test: 819

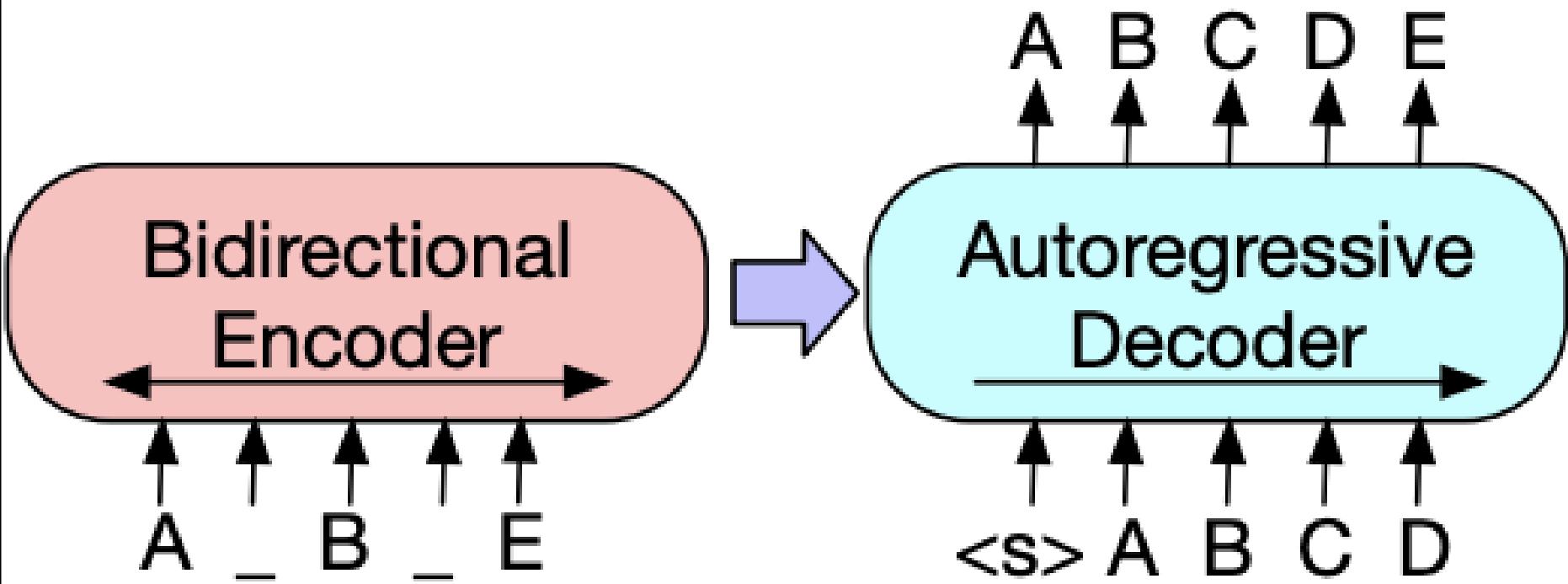
seq2seq

transformer encoder-encoder (seq2seq) model

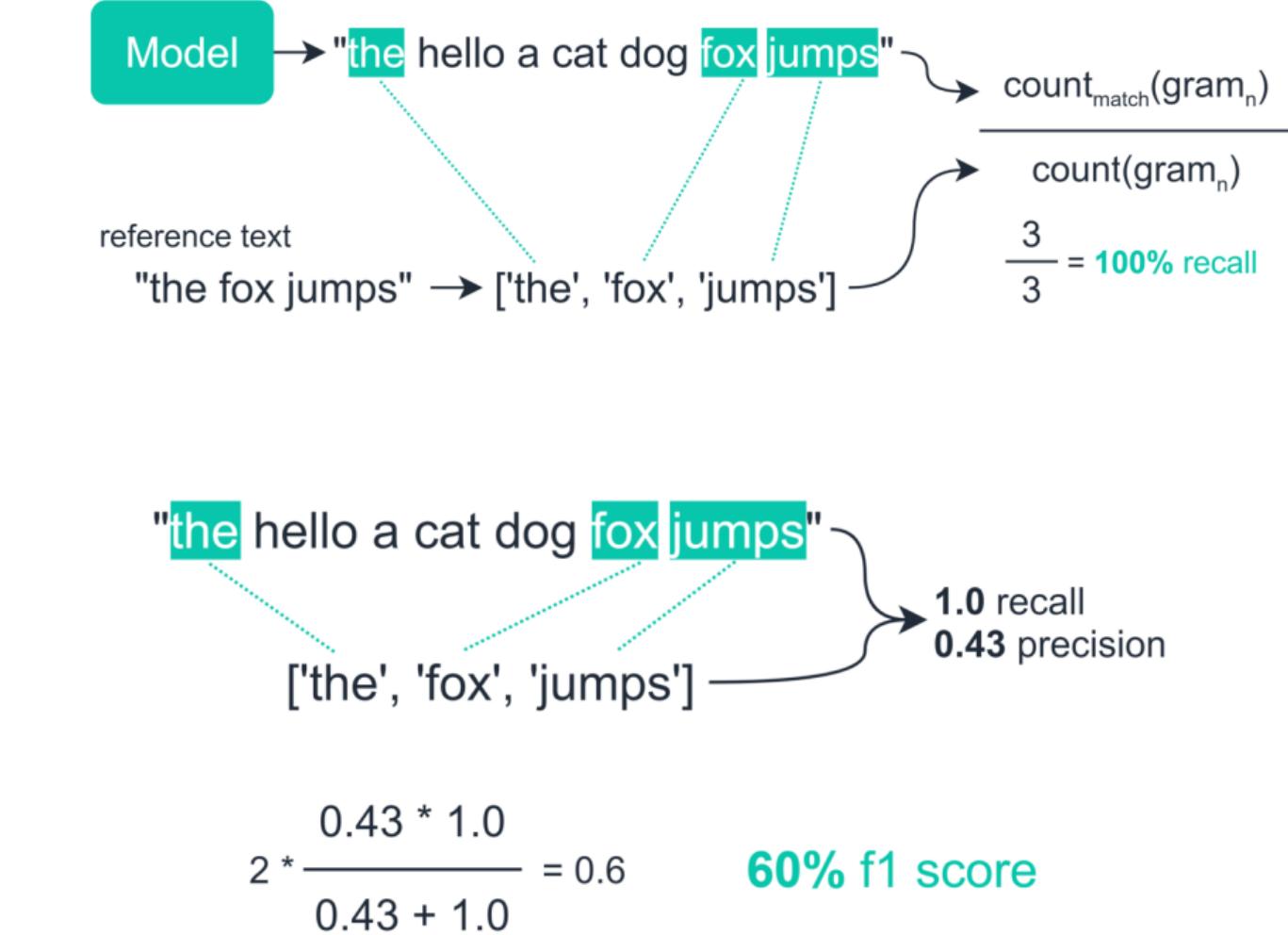
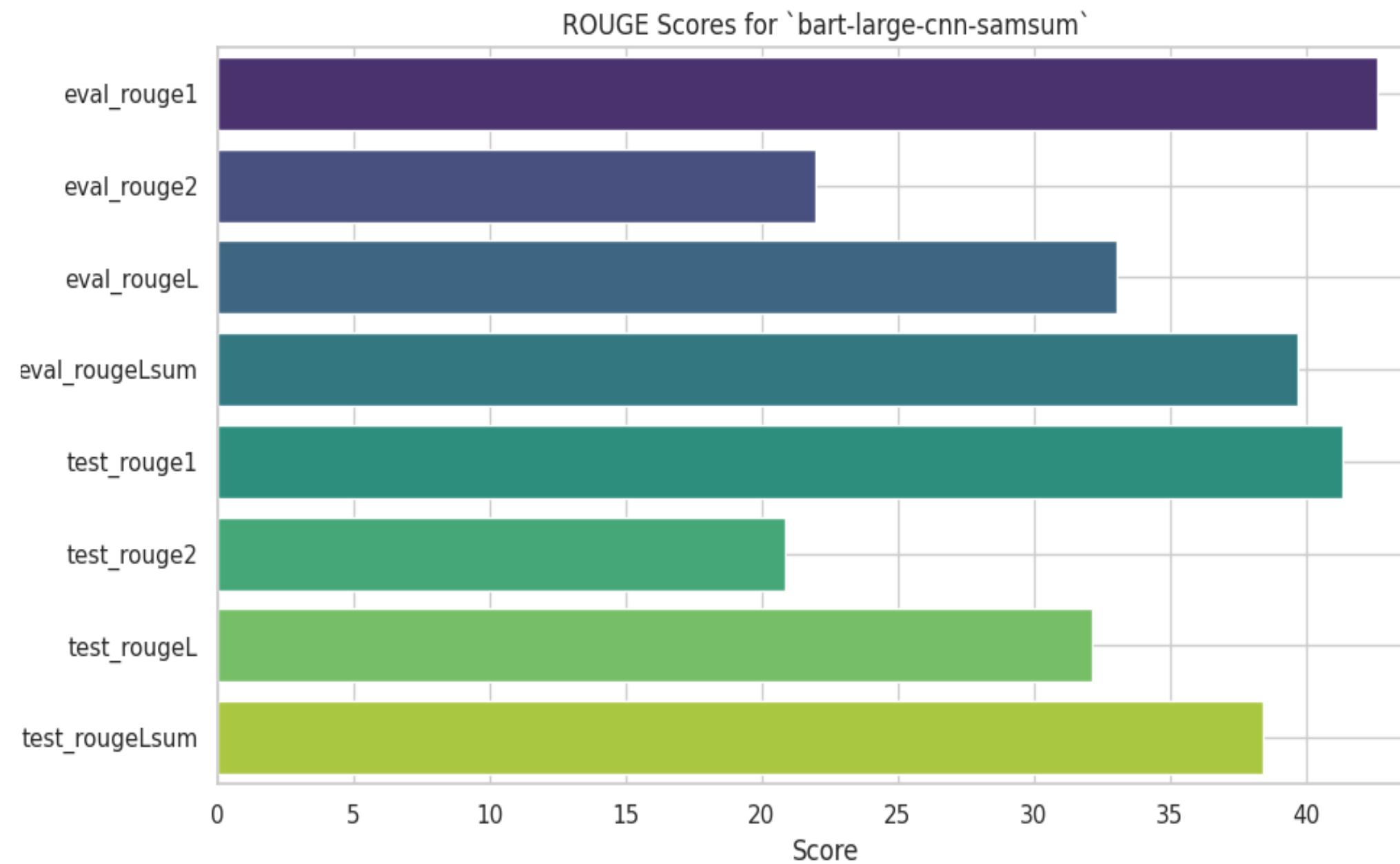


- bidirectional (BERT-like) encoder

- autoregressive (GPT-like) decoder.

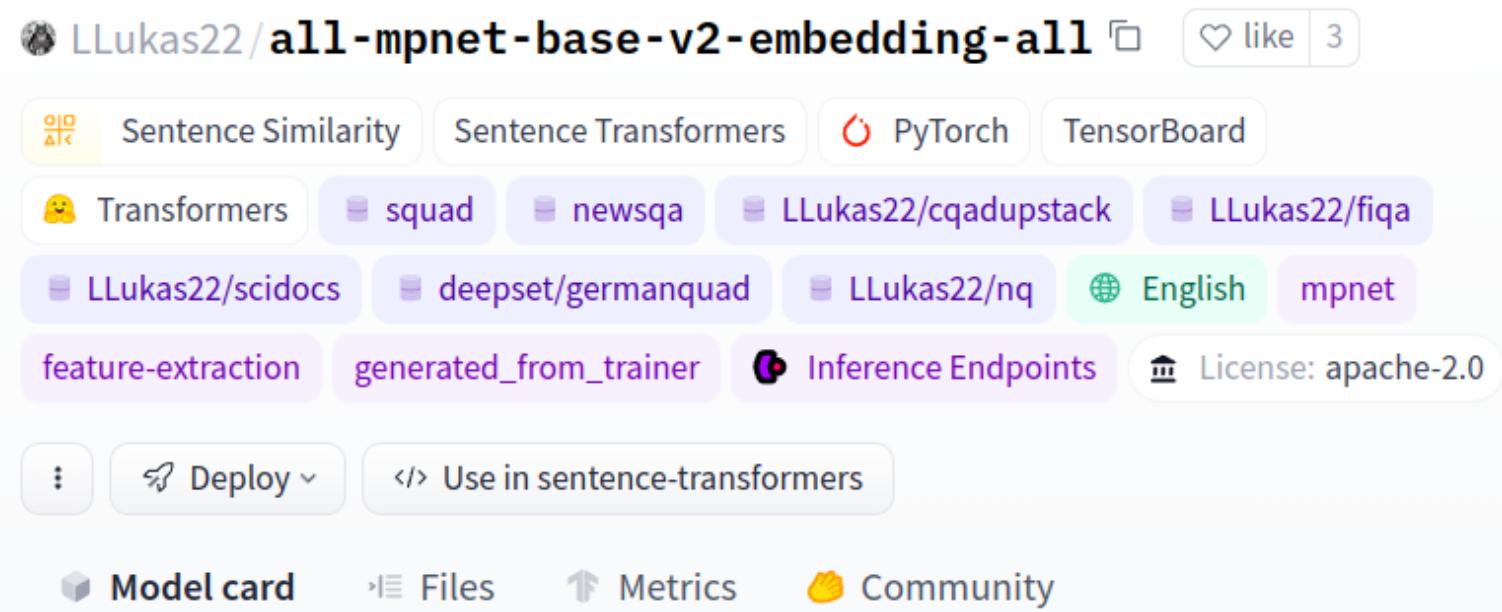


Evaluation Metrics



Keyword

all-mpnet-base-v2-embedding-all



Downloads last month

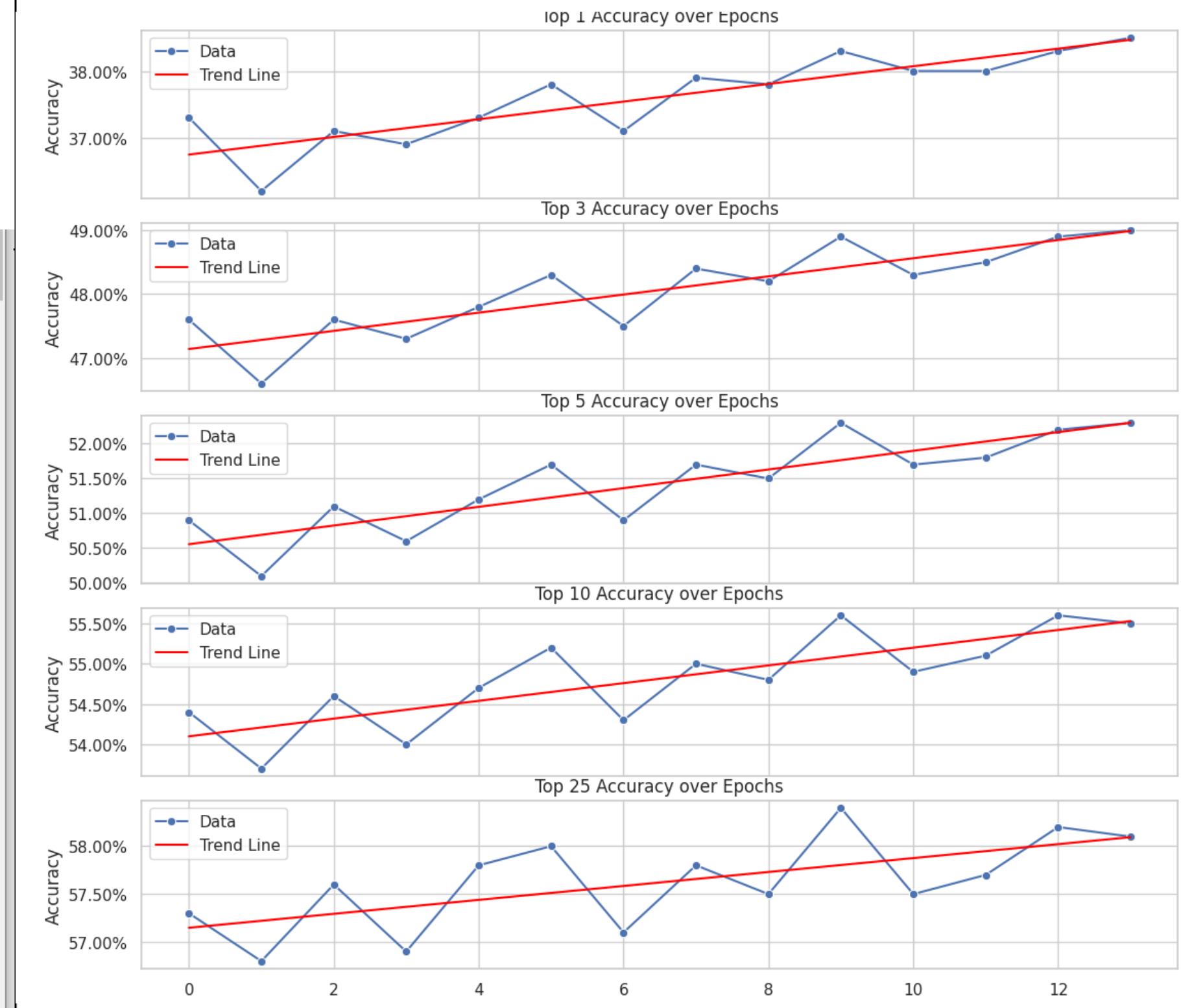
202

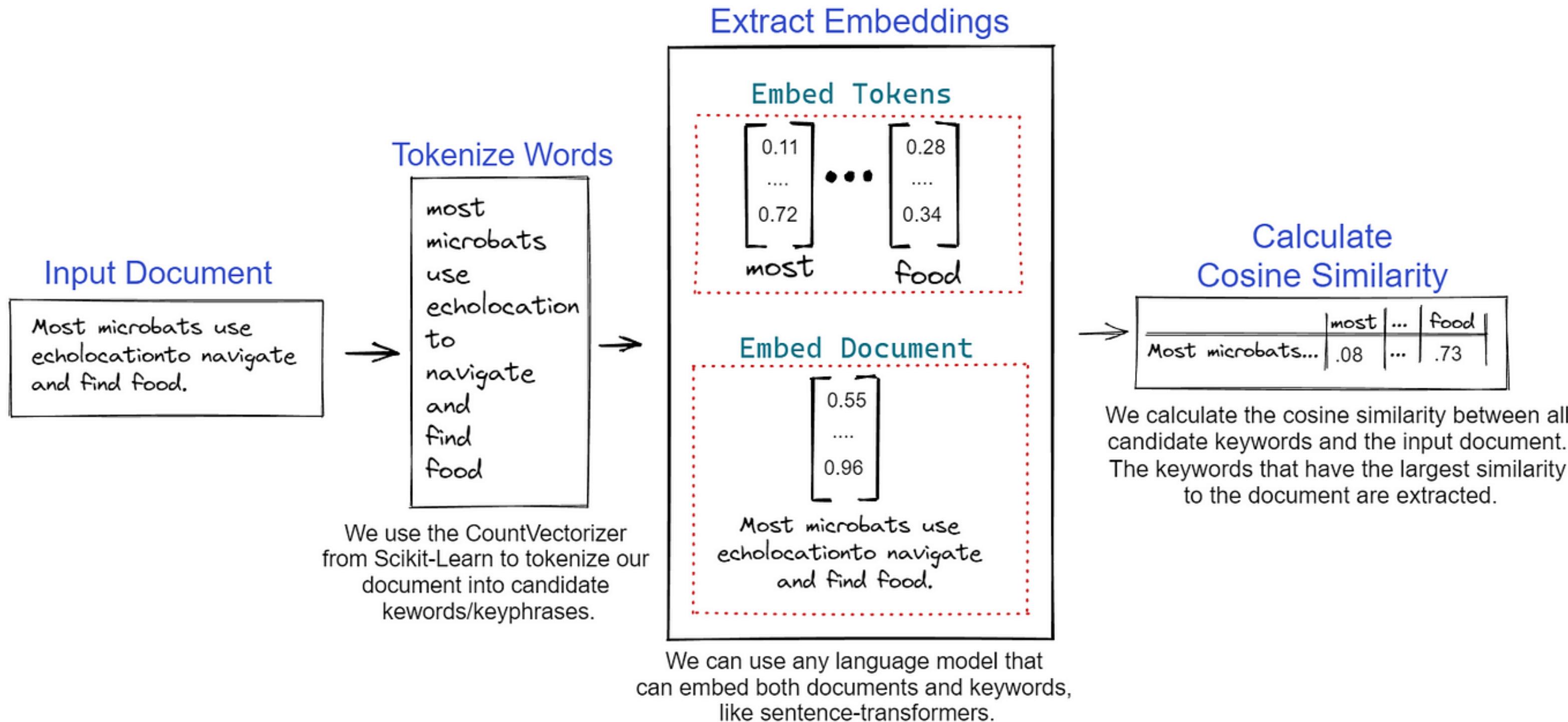


Inference API

Sentence Similarity

Examples







Discussion

1. Challenges

2. Limitations

3. Q & A



Discussion

Challenges



1. Out of Memory

For deploying NLP Model



2. Django Async

How to use both
Gunicorn & Uvicorn?



3. Image Data

Using Base64,
We completely implemented it.



4. Security

Encryption
Automatic TLS



Discussion

Limits



1. Mail Body Length

`len(body:str):int < 2048`

2. BERT Token Limit

`# of TOKEN < 1024`

3. OpenAI Response Time

at least 20s --> OpenAI's Limit

4. Browser Version

Your browser must support HTML5.



GITHUB

Mail AI

<https://github.com/skkumail>

<https://mailai.intueri.ai>



THNK YOU
FOR ATTENTION:)

Capstone Design Project
December 8, 2023